Middle Fork John Day River & Tributaries
Habitat Improvement Project

1992 Annual Report

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ABSTRACT

The John Day Basin supports the largest remaining, exclusively wild, runs of spring Chinook salmon and summer steelhead trout in Northeast Oregon. In 1987 over 30,000 summer steelhead trout and 4,800 spring Chinook salmon returned to the basin. On the average, the Middle Fork John Day River (MFJDR) and tributaries have accounted for 24% of the Chinook salmon production and 30% of the steelhead trout production.

Limiting factors in the Middle Fork John Day River are adult holding areas for spring Chinook salmon, rearing habitat (including pools with cover) for both spring Chinook salmon and summer steelhead trout, and high water temperatures. Limiting factors in the tributaries of the MFJDR are essentially the same, those being rearing habitat for juvenile Chinook salmon and steelhead trout.

In 1992, portions of the Middle Fork John Day River were treated in order to improve the fish rearing and holding habitat. This was accomplished by fencing a 1 mile portion of the Winegar Allotment to limit ungulate browsing of hardwoods. The fence will compliment structure work completed in 1991 by protecting hardwoods needed for shade in areas where holding pools were created. In addition, access by livestock and big-game will be restricted along exposed banks, allowing these areas to stabilize. The fence divides an allotment pasture, thus creating a riparian pasture where utilization can be monitored more closely.

Photo monitoring was completed for all past structures.

A hydrologic analysis (HEC2) has just been completed for a reversion project in Reach 5, River Mile 43. The river in this section was channelized and provides limited habitat. Reintroduction of flows to the historic channel will increase rearing habitat and shading. NEPA analysis will be completed soon, allowing a well informed decision on whether to proceed with this project.

INTRODUCTION

The John Day River Basin supports the largest remaining wild runs of spring Chinook salmon and summer steelhead trout in the Mid-Columbia River Basin. The Middle Fork John Day River has continued to be a significant contributor to the wild fish production in spite of serious impacts in the past. These impacts have greatly reduced the anadromous fish carrying capacity of the system. This was e&dent by the low spring Chinook salmon redd conuts recorded by Oregon Department of Fish and Wildlife in the fall of 1991. A redd count near the 10 year average was recorded in 1992 despite low flows and high temperatures due in part to the continuing drought.

Negative impacts to the Middle Fork John Day River and tributaries have resulted from beaver trapping, livestock grazing, mining, railroad and road construction, timber harvest, and clearing of land for pasture. The loss of beaver dams and, in turn, large woody material in the stream channel, has resulted in the loss of fish rearing areas and water storage capacity of the adjacent riparian community. Channelization and destabilization of stream channels caused by grazing, mining, road construction, and timber harvest have resulted in widening channels and increased sedimentation. Reduction of riparian woody vegetation due to overgrazing resulted in decreased shading, decreased bank stability, and elevated water temperatures. The result of all of these man-induced impacts is that the Middle Fork John Day River and its tributaries are shallower; wider, warmer, and have fewer rearing pools than did the pristine system. A reduction in the salmonid carrying capacity is inevitable given the cumulative effects of these impacts.

In the recent past, changes have occurred in the philosophy and management policies of the National Forest. Alterations in livestock allotment management plans have resulted in a gradual recovery of the riparian communities. Mining activity has been closely monitored in the past few years in order to curtail potential resource problems. Road construction is prohibited in riparian areas and road maintenance standards have improved. Riparian timber harvest prescriptions have been developed in order to reduce the detrimental effects of timber management on streams. Streams, riparian areas, and salmonid populations should respond positively to these beneficial changes. A change in thinking has occurred in the last few years concerning "hard structures." Research indicates habitat provided by structures does not provide the complexity needed for optimum salmonid production. Fencing can be a useful tool to provide protection of riparian hardwood species for increased shade and bank stability. "Hard Structures" do not allow the natural hydraulic processes to interact with large woody material which creates complex habitats.

Large wood is being recruited from the insect and disease killed fir species. This large wood provides material for interaction with high flows as well as restricting ungulate access in riparian areas. Short-term loss of shade has occurred in some areas but the increased sunlight allows hardwood growth.

The John Day River Basin - Recommended Salmon and Steelhead Habitat Improvement Measures - "Working Paper", prepared by the Confederated Tribes of the Umatilla Reservation, has been used as a starting point for identifying priority treatment areas. Based on the above document and other pertinent information, the Middle Fork John Day River and Tributaries Fish Habitat Improvement Implementation Plan (Brassard and Gritz 1987) was drafted by the Malheur National Forest to address the limiting factors within the Middle Fork John Day River. The plan clearly describes the river system and the desired conditions for the river. Methods to obtain the desired conditions with the use of instream structures is outlined in the plan. Planning and design of these improvements has been coordinated with ODFW so that Malheur National Forest projects complement work planned to be undertaken on private lands in the Middle Fork John Day River. We plan to continue our approach of concurrent and coordinated BPA, ODFW, and Forest Service funded projects.

The primary objectives of the BPA-funded fencing work in 1992 was to increase the quantity and improve the quality of hardwood species for shade and bank stability along an area where holding pools were created for adult spring Chinook salmon in the Middle Fork John Day River (Reach 4: RM 47).

The tributary streams rehabilitated under previous contracts serve as temperature refugia for rearing Chinook and steelhead, which move from the Middle Fork John Day River up into the tributaries during summer warm water conditions. Continued placement of woody debris in tributary streams will occur. This woody debris will be allowed to "move" rather than be "hard structures." Stream buffers, road closures, and allotment monitoring will improve riparian condition and reduce sediment. Additional areas of concern will be analyzed to identify the best method to improve riparian condition and fish habitat.

DESCRIPTION OF STUDY AREA

The Middle Fork John Day River above Big Creek is in mixed blocks under private and National Forest Ownership (Appendix II). About 12 miles'of the main Middle Fork and over 100 miles of tributary streams within the boundaries of the Malheur National Forest provide anadromous fish habitat. These 12 miles of the Middle Fork John Day River are separated into 5 reaches based on National Forest ownership. All 5 reaches are located upstream of Armstrong Creek which is located at river mile 42 (Figure 1). Reach 4 was identified for fencing because of its location between two private land parcels. High water temperatures, limited rearing habitat, and lack of hardwoods were factors identified in this reach. Ungulate grazing of regeneration hardwoods has restricted growth and subsequently shade.

The Middle Fork John Day River originates at Phipps Meadow in T.llS., R.35E., S.25 (Figure 2). Crawford, Summit, and Squaw Creek form the headwaters from which the Middle Fork John Day River flows. The river flows in a northwesterly direction for. 50 miles before entering the North Fork John Day River. The upper reaches of the Middle Fork John Day River flow through moist meadows composed of silt and clay loams having soil depths greater than 24 inches. Lower reaches are comprised of Columbia River basalt formations. stream gradient varies, but generally averages less than*3% on National Forest Lands.

Hydrologically, the discharge pattern on the MFJDR is characterized by high spring runoff from winter snow melt combined with spring rains. Peak runoff usually occurs in April and May. Approximately 70% of the annual precipitation falls from November through May, mainly in the form of snow. The MFJDR is characterized by low flows in August and September. Average annual rainfall varies from 9 to 40 inches in the subbasin. The flora of the MFJDR is dominated by mixed conifer forests with moist meadows in the upper reaches and dry juniper and grasslands in the lower reaches.

In the past, portions of Reach 2 (RM 58 to RM 62) have been logged and grazed, while sections have been rechannelized during historic railroad construction. These activities have resulted in a loss of usable fish habitat. Major factors limiting fish productivity in Reach 4 are the lack of pools with adequate cover, absence of overhanging vegetation, excessive summer water temperatures, and sedimentation resulting from exposed banks where livestock have grazed. In 1991 holding pools were created and juniper riprap for bank stabilization was placed. However, these changes would not provide shade or overhanging vegetation. Excessive ungulate browsing restricted hardwood growth. The fence will enable the permittee to better control livestock utilization. The fence was also designed close to the water to reduce big-game use of the vegetation near the river's edge.

METHODS AND MATERIALS

Middle Fork John Day River: Reach 4

A contract was awarded to Scott McClintoc of Burns to construct a 4-strand barbed wire fence. The contractor furnished all materials and labor to build the fence to Forest Service specifications. Treated wood corner posts and steel posts were used to increase the useful life of the fence. Two gates were installed at locations that would minimize bank damage when the permittee moves cattle from one pasture to another. The fence divided one pasture, thus creating a riparian pasture and an upland meadow pasture.

RESULTS AND DISCUSSION

Middle Fork John Day River - Reach 4

A forest shutdown due to fire danger prevented the fence construction prior to the permittee's use of this pasture. Therefore hardwood species did not benefit from the fence in 1992. Structures placed in 1991 continued to function as designed. Beaver have taken up residence near the pool structures. Actual costs for all work are summarized in Table 1.

Maintenance of Structures and Photo Point Establishment

Photopoints were established on a.11 structures completed in Reaches 4 and 5 in 1991. Structures on the following creeks needed minor repairs: Upper Middle Fork John Day River, Beaver Creek, and Ruby Creek.

Coordination and Miscellaneous Acceomolishments

none

SUMMARY AND CONCLUSIONS

Middle Fork John Day River: Reach 4

A fence was constructed along 5,500 feet on the southwest side of the Middle Fork John Day River. The Northwest Power Planning Council's smolt Production Methodology has been used in the past to estimate potential increase in dollar value resulting from the potential increase in the number of returning spawners as a result of the improvement projects. Since this year's fence was constructed to compliment the structural work completed in 1991, no additional dollar value will be estimated.

Table 1

SUMMARY OF EXPENDITURES

In 1991 the total amount of expenditures was as follows:

Construction Contract (Scot McClintoc)	**$**	4,230
Salaries (contract prep & administration)	$	3,703
Vehicle Rental/Gas	$	46
Items Purchased (supplies & overhead)		
Contract overhead	$	561.66
Film and developing	$	49.90
Total		612
TOTAL COSTS	$	8,591

TABLE 2

Table 1. Summary of the number and types of BPA-funded habitat improvement work in 1992.

1992
BPA-Funded Fish Habitat Improvement Structures
, Malheur N.F.

stream	District	Length	structures
Middle Fork John Day River	Long Creek	5,500 Ft.	4-strand barbed wire fence

Literature Cited

Brassard, D. and R. Gritz. 1987. Middle Fork John Day River and tributaries Fish Habitat Improvement Implementation Plan. Malheur National Forest Project No. 84-21, Contract No. DE-AI79-84BP16064.

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